Abstract

A high-bandwidth, transient suppressing voltage down-converter apparatus and a method for transient suppression in such converters is disclosed. The invention is an integrated voltage converter electronic circuit, comprising of a first switch device connecting to an input power node at one of it's channel terminals and to a first integrated inductor at the other, with the first inductor's second terminal connecting to an output node, where this series combination of the first switch and the first inductor is a portion of an integrated voltage down-converter, a bypass circuit path, formed by a second switch device, or a series combination of a second switch device equivalent to the first switch device and a second inductor of the same self-inductance value as the first inductor, where the bypass circuit path connects between the input power node and the output power node of the integrated circuit in an electrically parallel configuration with the series combination of the first switch and the first inductor, voltage conversion circuits and conversion-bypass control circuits, receiving a plurality of signals as input, and connecting to the power input and output nodes of the integrated circuit as well as the control inputs of the first and second switch devices, and a common semiconductor substrate upon which the first switch device, the second switch device, necessary voltage conversion and control circuits, the first inductor, and the second inductor are fabricated.